BIOSOLIDS EXPERT PANEL

Combined Meeting of the Environment and Health Subcommittees

Meeting Minutes

Date: June 25, 2008

Location: VA Department of Fire Programs, 1005 Technology Park Drive, Glen Allen, VA

Panel Members Present:

- **Henry Staudinger**, Citizen representative
- **Dr. Howard Kator**, Virginia Institute of Marine Science
- **Dr. Greg Evanylo**, Virginia Tech Department of Crop and Soil Environmental Sciences
- **Dr. Jonathan Sleeman,** Virginia Department of Game and Inland Fisheries
- **Jerre Creighton,** Virginia Department of Forestry
- **Scott P. Johnson**, Virginia Department of Agriculture and Consumer Services
- **Dr. Rima Franklin,** Virginia Commonwealth University Cemnter for Environmental Studies
- **Dr. Alan Rubin**, consultant (principal Envirostrategies, LLC)
- **Christopher Peot**, Blue Plains, Biosolids Manager
- **Barry Dunkley**, City of Danville
- **Russ Baxter,** Virginia Department of Conservation and Recreation
- **Dr. Susan Fischer-Davis,** Virginia Department of Health
- **Dr. Robert Call**, Medical practitioner
- **Dr. Robrt Hale**, Virginia Institute of Marine Science

Supporting staff present:

- **Jeff Corbin**, Office of the Secretary of Natural Resources:
- **Mike Foreman**, Virginia Department of Conservation and Recreation
- **Neil Zahradka**, Virginia Department of Environmental Quality
- **Christina Wood,** Virginia Department of Environmental Quality
- **Robert Hicks,** Virginia Department of Health
- **Jacob Powell**, Virginia Department of Conservation and Recreation

The following panel members were not able to attend this meeting:

- **Dr. W. Lee Daniels**, Virginia Tech Department of Crop and Soil Environmental Sciences
- **James Golden,** Virginia Department of Environmental Quality
- **Dr. Mark Levine**, Virginia Department of Health
- **Karen Pallansch**, Alexandria Sanitation Authority
- **Dr. Leonard Vance,** Virginia Commonwealth University School of Medicine

Introduction

Assistant Secretary of Natural Resources Jeff Corbin brought the meeting to order at 9:08 a.m.

Facilitator, Mike Foreman asked the panel members to introduce themselves.

Neil Zahradka asked if any changes needed to be made to the minutes from the previous meeting. Mary Graf said that her comment, which was recorded as "I thank the panel for bringing out the truth of the issues", should have been directed to "those" panel members who are working to bring out the truth. Mary Carwile responded that some of Paul Foster's public comment was documented inaccurately and that he would email corrections to the note taker. These items will be corrected in the minutes.

Jeff Corbin raised the question; does the panel want to take a field trip? Do they believe it would be worthwhile to visit a wastewater treatment plant and application field? Chris Peot believes that the panel members should get to see a land application site before the final report is made and he will take the lead. He will select 2 dates and the trip will be planned for the date that most panel members can attend. It will not be one of the Panel's scheduled meeting dates.

As previously discussed, we will begin pulling together recommendations that come out of the expert panel meetings to answer the General Assembly's questions and begin building a skeleton for the final report. Panel members are requested to send in recommendations.

Announcement: An energy conference will be in Richmond on September 18, 2008, preceded by a workshop on September 17. Members are encouraged to attend, but it is not a panel sponsored event.

Guest speaker: Mike McEvoy, Executive Director of the Western Virginia Water Authority and Chairman of the Virginia Biosolids Council. The Western Virginia Water Authority (WVWA) has one wastewater plant that serves 200,000 people in the Roanoke Valley. The WVWA collects methane from its anaerobic digesters and uses it to heat and power the treatment plant. They land apply approximately 9,000 dry tons/year on over 4,000 acres. The 25 year old program has been recognized by EPA through its National Awards Program. They have a 5 year waiting list of farmers who want biosolids.

The Biosolids Council provides information and public outreach regarding biosolids recycling: composting, land application, other management options that are protective of public health and the environment. Most of the large municipal facilities and authorities, and application contractors are represented on the council.

The Council has partnered with other organizations to evaluate alternative technologies. In addition to extracting the methane, there is more energy potential in the organic matter of the biosolids; he believes that this is a renewable resource we should be looking at. In partnership with the Chesapeake Bay Foundation and various state agencies, the Council has formed the Virginia Biosolids Renewable Energy Task Force. Their goal is to identify safe, practical, dependable and environmentally sound technologies that will produce renewable energy from municipal organic sources, increasing options for the municipalities and minimizing greenhouse gas emissions. CBF has been working on something like this with animal manures. They will offer a day long seminar

this fall to examine potential technologies. The task force is also plans to evaluate funding options for pilot or demonstration projects and identifying barriers to new technology in Virginia. A copy of Mr. McEvoy's presentation is included as Attachment 1.

Alan Rubin thinks there should be as many management options as possible. He pointed out that all technologies must be legal and regulated and that the health, environmental and aesthetic impacts of the alternative technologies must also be evaluated. If not, we will be back in the room talking about those technologies.

Mike Foreman reminded the citizens that there is a public comment period at the end of the day and he has post-it-notes for them to write their questions on.

Jeff Corbin announced that he found out yesterday that the VA Association of Realtors has posted a survey regarding property values, sales and biosolids. There is a statement at the end that the results will be used by the Panel of Experts on Biosolids. Dr. Hale said that he and Henry Staudinger are the subcommittee on real estate and they worked on the survey and submitted it to the association in an attempt to answer the question about property values and biosolids posed by the General Assembly. The survey is online and available for all to read. Barry Dunkley said that even though he doesn't think that the survey was meant to be biased, anytime you ask if activities on a farm decrease the value of property, the question is yes. Discussion ensued; while some agreed that the questions seemed to be unbiased, others believed that the questions should not have been submitted "on behalf of the panel" without full panel approval. Perhaps the survey could have a comment that survey results will be provided to the panel? The data will be presented to the panel at a future meeting and the panel can determine if the survey was biased. Mr. Corbin will call the association back.

Dr. Jonathan Sleeman presented his proposal to support funding for the study of the potential acute and chronic health effects of biosolids on wildlife. To summarize: Biosolids are used to effectively restore ecosystems however some references give cause for concern about long term impact on wildlife as they bioaccumulate up the food chains. We have some fairly large knowledge gaps so he recommends that we establish a monitoring system to look at potential acute and chronic health effects of the application of biosolids, to answer the question either way.

Jeff Corbin asked who would conduct the monitoring. Dr. Sleeman sees a public/private partnership; state agencies and universities.

Alan Rubin added that if you try to determine impacts of soil amendment where there is wildlife, first you have to look at what the material is doing as a fertilizer, changing the ecological conditions for the flora and fauna, due to N & P, not necessarily due to toxic materials. Second, to determine whether or not you have an impact on an agricultural setting, you have to look at the ecological system of row crop farming. You have changed the original ecosystem, so what is your baseline? You need to determine that. Then you can determine if there are effects from the metals and the PPDs. Is the impact significant to the ecosystem? Just an increase in heavy metals in the soil or tissue of an animal or a plant does not mean you have an effect on the ecosystem, or a negative effect.

Dr. Sleeman: The other benefit of looking at terrestrial and aquatic wildlife is that they can serve as sentinels for human health concerns; they are more sensitive to these compounds than humans. So there is human health relevance.

Barry Dunkley: Are resources available? In the farming community, there are fertilizers and pesticides that are magnitudes greater than what we are talking about with biosolids. This has merit but we have limited resources. We have to make this a recommendation, but a lower priority recommendation.

Dr. Susan Fisher-Davis: Tying in wildlife as a sentinel for human health makes it relevant.

Mr. Corbin asked Dr. Sleeman to start putting together his proposal before the next meeting.

Dr. Sleeman: Yes, he will recruit some of his colleagues to assist him. Jerre Creighton offered assistance.

Chris Peot asked if we are limited to a pool of money for the recommendations that we make. The answer was no; the panel shouldn't limit the recommendations based on money; if they want it they will fund it. Also Sally Brown would bring a lot to the table. Dr. Rubin just found out that she can not make it to the July meeting. Rob Hale: Dr. Brown is an agronomist, not an eco-toxicologist or an environmental chemist, can provide information on remediation of sites and alternative technologies.
Russ Baxter: What would the study look like? Dr. Sleeman: Monitor, capture and test wildlife. Look at acute effects – fish kills, etc. Chronic – long applied sites vs. control sites.

9:50 a.m. Neil Zahradka – DEQ Biosolids Program – Buffers Provisions
Mr. Zahradka gave a review of the regulations in regard to buffers that currently exist and statutory provisions. DEQ can add special provisions to a permit where needed in the vicinity of land application site. DEQ can provide extended buffers where incorporation is not practical. VPA Permit Regulation restates the statute. Mr. Zahradka's presentation is included as Attachment 2.

Discussion ensued. DEQ can change buffers in response to health or nuisance issues. If there is a health complaint the local Health District Director must be contacted. All farming activities produce nuisance odors – odors come from fertilizers, manures and dairy farms. There was concern that the land application would be stopped when there is a complaint but there is only a short window of time when you can apply. Also, the biosolids would backup at the wastewater plants. DEQ is developing procedures to establish when work would be stopped.

Chris Peot asked if there is anything in the regulation that specifies how DEQ and VDH coordinate and is there a written record of how decisions are made. Documenting the decision is currently not required. The Health Commissioner makes the final decision. The procedure needs to be established so that citizens don't get the run around like Mr. Foster; establish the criteria and procedure for stopping work and extending buffers.

VDH BUR Regulation came to DEQ as is. Notice of Intended Regulatory Action was published Monday June 23, 2008, to open the VPA and VPDES regulations in regard to biosolids. The buffers are a component of that NOIRA. Buffer sizes were determined based on available science and then a margin of safety added. But they are based on overland flow of nutrients, not odors.

Potential recommendations from discussion:

- Develop protocol for responding to health concerns: who to contact; how decisions will be made; when to stop work; when and how far to extend buffers; documentation of the decision making process and results.
- Advance notification so that complaints can be heard and resolved prior to scheduled land application
- Look at potential human health effects vs. economic impact on the farmers

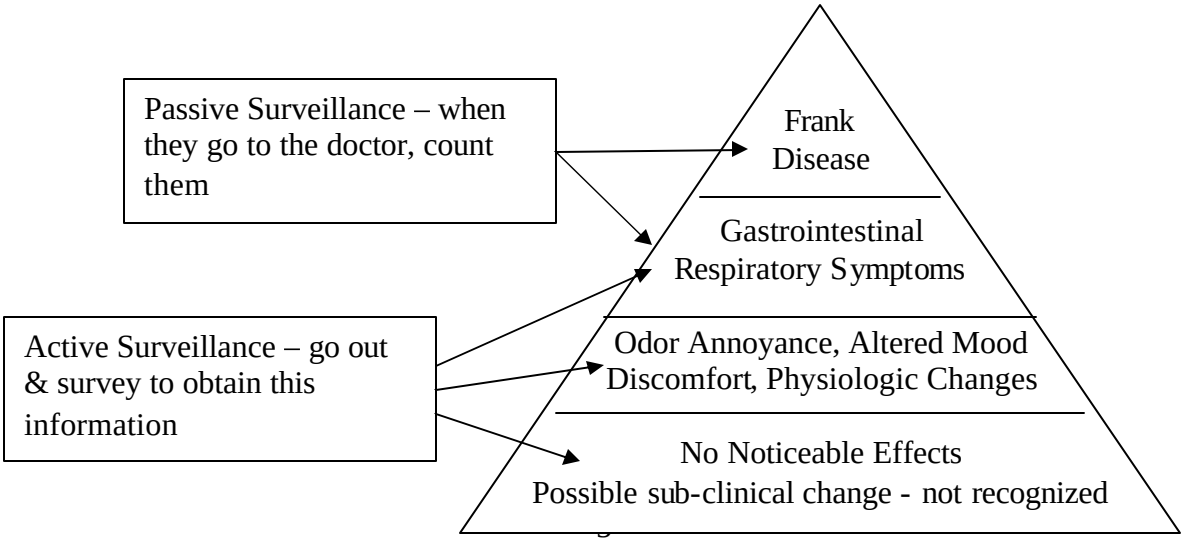
Break 10:35 – 10:47

Dr. Steve Wing, Department of Epidemiology, UNC School of Public Health
Epidemiologic Surveillance and Investigation of Symptoms of Illness Reported by Neighbors of Biosolids Land Application Sites
The protocol developed for the Water Environment Research Foundation (WERF) to conduct surveillance and investigations of reports of illness in people who live around biosolids land application sites. Dr. Wing had worked on issues reported from people who live around confined animal feeding operations. Similar symptoms are reported around both operations; agents are similar around both - bacteria, viruses, parasites, endotoxins found in both. There are some agents in biosolids from cities, not found in animal waste.

Approaches in epidemiology – what's there, what are the symptoms, how often do they occur? But many of the same symptoms occur in the general population where there are no biosolids. There is variability in susceptibility and allergic responses. Surveillance – finding out what's there, counting events.

What use can be made of the results of the survey using surveillance and investigation? You can determine are things getting better or worse, are there more cases in a certain area, or where a biosolids from a certain WWTP are land applied or where different equipment is used, etc. This is a fairly new area of study, so there are no historical references.

Hypothetical exposure to biosolids agents that migrate off site, i.e. assumes that there is exposure. There are odors; the odors could be markers for other chemicals in the plume. Cases are difficult to count, the lesser symptoms are the most difficult to count because they do not go to the doctor.



There is a gradient among the categories, a continuum between health and disease – Health is a state of wellbeing; disease is a condition that can be diagnosed by specific criteria. Being able to enjoy the yard, hang clothes on the line, walk in the neighborhood are important for your positive state of health, but if you don't have those things does not mean you have disease.

Alan Rubin added that the buffers should try to ameliorate the 2nd, 3rd and 4th levels in the pyramid. When we make recommendations on buffers to give relief to the citizens, someone with odor annoyance is as important as someone who has a frank illness from exposure. Dr. Evanylo responded that this is true if we want 100% protectiveness. But a company brings it to our neighborhood and they are making money.

Perform a study of a few hundred people who are exposed, study what the specific agents are. Measure what they are exposed to in real time and follow-up, look at little exposure vs. higher exposure, and see if there is there a dose response relationship.

When conducting surveillance, in general, the more effort and expense provides stronger evidence that can be used to try to link the exposure with the disease. Passive surveillance is the least expensive, but people may not call to complain, so we don't know there is a problem. Active surveillance collects the most data.

The Protocol - provides a template that the agency can use to begin the investigation and count complaints that are called in to the state, local or federal officials. This is not the protocol to link a person who was exposed yesterday and gets cancer years from now. This study will tell you about patterns of reported illness.

1. A call comes in and you need to find out when the exposure was and when symptoms were exhibited. If they are recent symptoms move on to the next step. If they answer yes to certain questions in the first step, you move on to the next step.
2. Site identification report, records of land application and permitted fields
3. Biosolids generator questionnaire: determine where the material came from and how it was treated, etc.
4. Applier questionnaire: the equipment used, how the buffers were handled.
5. Site follow-up: visit the area, map the area, affected homes vs. the land application site, inspect for off-site migration and note other sources of exposure.

People generally don't call the government unless there is a serious problem. So the calls we get are based on where the problems are and where are people who make calls, which is based on education, age, race, etc.

Folks often go to local authorities first, but the state agencies – permitting agencies have the knowledge and information and contact with the generators. The state and local agencies should be coordinated. Local people or regional state staff should be trained together.

No trial has been conducted. WERF has a request for proposals to conduct a pilot test of the protocol. This could be the basis for a nationwide database. People ask, did this cause me to be sick? That question can not be answered. But we could measure the material present when the application occurs, when the wind blows. Was the person at home? But the survey will not answer these questions. Dr. Wing's presentation is included as Attachment 3.

Dr. Fisher-Davis said to think about what the panel is charged with and does this survey address that?

Lunch Break 12:15 – 1:10 p.m.

Reiterated: What is the charge of the panel – to evaluate the health effects of biosolids? Will the study help to answer the question? Do we need an etiologic study? A study of 1 neighborhood with biosolids from 1 generator applied with 1 method of application, to look at migration of materials off site. Measure what people are exposed to and look at their physiologic measures, symptoms and quality of life. But it is very specific to that county, those biosolids, and the condition present during the study. The survey is more general. You can get a little more analytic with the survey data. Look at respiratory symptoms vs. GI symptoms, pathways.

Chris Peot added that this is a good start. Dr. Wing: you need good public education and provider education. Make people aware of what biosolids are and if they have difficulty or concerns that they should call. Mapping the permitted areas, where the land application occurred and where the reports come from will help to see the extent to which they overlap. If land application sites are in areas that are not populated, you expect not to get calls. If you are land applying in populated areas you will get more calls.

Nationwide, most complaints come from NC, VA, PA, FL, and Ontario. They used to have more complaints in CA, TX and NH

It is difficult to determine cause of cancer clusters, the time period between exposure and disease is so long, you can not go back and determine the exposure. And with sludge it is difficult to determine what the agent is. It is easier to identify infectious disease because the disease is named for the bug that can be found in the patient and may tied to the source.

It would be difficult to implement at local level because of minimal staffing at the local health districts; should be coordinated at the state level. Petition the legislature for more resources.

Steve Wing and Rob Hale have received an NIH grant to do a study, enroll neighbors of land application sites and have them go through a clinical exam and ask them report all odors and symptoms, issue related to quality of life that coincide with an application event. They will also measure air pollutants to determine if there is a correlation of what is measured in the air and what people report.

Dr. Evanylo: For chronic studies shouldn't you look at the farmers that have used biosolids for years and wastewater treatment plant operators? And the study should include the farmers. Steve Wing: In general, workers are healthier than non workers. The study will not be large enough to conduct an occupational study, only environmental. This study will look at the same population when they are exposed and not exposed.

Dr. Call: What if we did find cause and effect on a very low incidence. What is the scope of the problem? What is the state going to do? Dr. Fisher-Davis: If low incidence may consider modifying land application practices. Dr. Call: What are we going to get from this survey? We don't want to say that biosolids are safe, but then 5 years down the road you find out it's not safe.

Dr. Evanylo: based on the protocol described it seems that appropriate analysis could determine which factors are most important and that with a specific type of land application with these buffers in these conditions you remove 99.99% of the risk or whatever level you choose.

Dr. Wing: You are not protecting people with the surveillance effort, not changing exposure potential, just collecting info. Dr. Call: If we don't do a survey, there could be ramifications later. Mr. Johnson: but the data needs to be analyzed, not just collected for the sake of collecting it.

Mr. Corbin: How do you let the population know without biasing them - What are biosolids, is this something I need to worry about? Dr. Wing: Need to educate the general population; they need to know more about what happens when you flush the toilet or throw your trash away.

DEQ plans to get permitted sites into the GIS system and put it on the data viewer that is available on the DEQ website.

Dr. Hale: We need to collect data in a systematic way, but how will the citizens respond when they hear we will collect data for 5 years and then study it. Weather, location, source of biosolids will create a lot of noise in the data. Need to look at a lot of replication to see what is important. Individual studies to look at cause and effect, if there is a problem associated with one in 10 applications/sites, then when choosing a site to study, your chance of choosing a site that will have a problem is one in 10. The study is a good starting point but not necessarily responsive to the charges of the panel.

The people are here because of a particular land applied material. This survey could be applied to other land applied material in addition to biosolids.

Dr. Wing is working on modifications to make the survey more streamlined and easier to use, if VA chooses to use the survey, he will work with us to customize the survey.

Questions Submitted by the Public 2:06 p.m.

1. Do personal physicians have the ability to stop application? No, only the Health Commisioner
2. Who enforces the buffer provisions and will there be penalties? DEQ and penalties follow the enforcement matrix, no set amount for any particular one item, it depends on a number of factors.
3. Acknowledgement of illness? Jo Overby, Campbell County – she keeps hearing about nuisances, it is just odors and trucks on the road, we did not get up at 5:00 a.m. to come here all day just because of odors and trucks, people are really getting sick.
4. What is a nuisance? Mary Graf - Usually thought of as belittling, or is it a substantial issue. In the country you expect farm odors that are innocuous but you don't expect to have health hazards. Dr. Call - In the pyramid a nuisance is less than actual symptoms, something noxious like an irritant, below the level of health impact.
5. What provisions are in place for citizens to hold up an application? And question # 9. Who has the authority to stop an operation? Currently the Health Commissioner – DEQ is working with VDH to develop a procedure for responding to health complaints. Once finalized the information will be disseminated to the public in as many ways as possible.

6. Who has ultimate authority over biosolids? DEQ enforces the law and regulations and controls day to day operations. VDH has the authority to issue an emergency stop work order for health issues.
7. Is there a record of where sludge was generated when applied? Does this apply to out of state generators? Yes, the certified land applier must know and it is reported to DEQ prior to application and in the monthly report for all in-state and out-of-state biosolids that go on every site.
8. Who is responsible for placing the signs ahead of time and who is responsible for the size and information? The regulation says how large the sign must be and the information it must include, but the applier is responsible for making and posting the signs

Public Comment 2:25 p.m.

Rhonda Bowen, Recycling Manager for HRSD. They have been land applying biosolids for over 25 years. One of their farm sites, Progress Farm is located next to the wastewater plant and the Ocean Lakes Subdivision, within 1,000 feet of a school and a city park, and within 400 feet of 2 large water bodies, wetlands and a forested area. Over 5000 dry tons per year produced at the Atlantic Plant. Designed a comprehensive monitoring program to look at impacts of frequent long term biosolids application on water, soils, plants and nearby neighbors. They have 6 pairs of ground water monitoring wells around perimeter of farm site to study ground water. They also studied surface water, plant tissue and soils, for 2 years before they began land application. They have applied 9X the rate allowed. They have over 20 years of data showing no negative impact and they have not had any complaints; no reports of illness. They have not experienced any contamination of ground or surface water and the crops and wildlife thrive. Based on their research they believe that biosolids can benefit rural and urban neighbors when done in conjunction with the current regulations. Any recommendation for further controls should be based on sound science. Ms. Bowen's presentation is included as Attachment 4.

Dana Todd, Farmer in Chesapeake area. He has been using biosolids for about 20 years. It makes sense to recycle, using biosolids on corn and wheat vs. commercial fertilizer which is made with oil; something we are starting to run out of. Seeing the effects on the economy, as a country we need to use more common sense. Biosolids land application program has safeguards built into it; there is routine monitoring and an inspector comes out. Better to get beneficial use from the material rather than incinerating or taking to the landfill.

Dana Todd read a presentation from Curtis Wolfarth, Farmer in VA Beach. (Mr. Wolfarth planned on being at the meeting but had an emergency.) For 25 years biosolids have made a significant difference in his farming operation by keeping his costs down, helping him to keep the family farm. He uses the NMP to prevent over fertilization and runoff into North Landing River watershed. He has lived and raised 3 children and now 2 grandchildren on the same land where he uses biosolids. No one around his farm had negative effects from biosolids. Biosolids have become an essential part of family farms allowing them to be competitive on the world market.

Olin Slabaugh, Farmer, Chesapeake, VA. First biosolids were land applied in 1994. In 2003, he had a farm with shallow topsoil; biosolids turned this marginal farm into a top producer. If more biosolids were used on marginal farmland in the nation we would reduce landfill problems, reduce emissions to the air, be less dependent on other countries and be more productive. We farm in

highly populated areas and get odor complaints; Lyle Jarrett, agronomist who supervises the application responds to the complaints and will explain that the odors will be gone in 3 days to a week, and explains the benefits of the program. With the cost of fertilizer, using biosolids keeps the farmers competitive.

Lyle Jarratt, Agronomist, certified to write NMPs in MD and VA. He a has worked with biosolids since 1980, and has worked from Wise County to the coast and up to Northern VA. He works with growers and NMPs and showed the farmers what nutrients they were adding. The farmers at first did not believe that the nitrogen was in the biosolids and they would add extra, but now they don't. Nutrient management works, helps the farmers to save money, leads to good crop production. May be limited by phosphorus now due to over fertilization in the past. In Hampton Roads, neighbors often sign waivers to decrease the buffers to help the farmers.

Roger Hatcher, Cumberland County. He lives on 450 acres with black angus and he grows hay for the cattle. Used the biosolids since 1998, apply as frequently as possible. They let the biosolids be applied to within 100 ft of the house. The family has no health issues from it. Until recently his 90 year old mother lived with him, she had no health issues with it either. The hay grows so thick it is difficult to harvest. His credentials: B.S. in Biology, 1968; Ph.D. in Microbiology from VA Tech, 1973; 25 years in the industry consulting with Waste Management, much of that dealing with biosolids; 16 years owned his own engineering firm; been actively farming since 1989; participated in 2003 WERF Biosolids Research Summit representing expertise in microbiology and farming; and he is president of the Cumberland County Farm Bureau. The Expert Panel has a daunting task given the lack of budget and time. Commend the panel for their efforts. We don't need larger buffers than what we have. He has observed that most comments are from the urban person new to the farming community or a group in a place where biosolids application is new. Where biosolids have been in place a long time; those places are virtually quiet. Odors are going to be used as a weapon to deprive farmers of this valuable resource. Odors were used to establish buffers in the swine industry, stopping its growth in VA, but the existing swine houses have no odor problems. The 1500 – 2000 foot buffers wiped out the opportunity for young farmers to get started. As Farm Bureau president he is concerned about young farmers. The older farmers will be gone and who will replace them; losing one business opportunity is a big loss.. Dr. Pepper's papers on aerosols have been submitted to the panel. There have been two attacks claiming they were putting down biosolids when they were putting down chicken litter. If odors win, then animal manures will be next. They are very concerned about odors and buffers.

Lacy Womach, Farmville, VA - She has a dairy science degree from VA tech, lives on her husband's chicken and beef farm and works on the family dairy farm since 1989. She is in favor of biosolids application with the current regulations. They have used biosolids on dairy farm for 10 years, and were first approached by the municipality of Farmville. They did extensive research before allowing the application. They believe that the state agency and land appliers are doing a thorough job overseeing the processes. She has been married to 2 highly respected farmers, both designated century farms and using biosolids to offset cost of commercial fertilizer, which is unregulated with questionable inorganic materials. They have NMPs in place which limits when and where they can spread. Biosolids are written into the NMPs so that they can get the very valuable lime stabilized biosolids for fields that will not take manures due to distance or pH of the soil. She urges the panel not to use increased setbacks and buffers as a way to regulate biosolids out of use for most farmers' fields. Opponents cry use more animal waste, but animal waste is untreated and more noxious than

biosolids. Please use caution, reliable science, good judgment and practicality to make your recommendation.

Joe Hazelgrove, Jr., Dairy Farmer, Forkland Farms, Cumberland County, Farm has been in the family over 160 years. Hearing the panel discuss odors from animal manures on farms, where do they think we will get our food? It had to be very important for him to attend this meeting to speak when he is getting ready to harvest over 200 acres. Four generations live on farm with 4 brothers and sisters, children, grandchildren and his asthmatic 91 year old mother, plus labor force of 7 families live on the farm. They have been receiving biosolids for over 13 years and they have not had any problems, no one has had any health issues. His mother has never had any adverse effects from biosolids. His mother is an astute business woman and she wants more biosolids applied on the farm so that she doesn't have to borrow the money to buy fertilizer. He speaks for over 100 permitted farmers in Cumberland who use this practice. On the farm they yield 200 bu/acre compared to the 70 bu/acre average for the county. They are saving $300/acre this year. At times they have 3 inspectors on site during application, MES, DEQ and the county monitor. The public should have full faith in the oversight of the applications. The excess buffers that have been discussed will put entire farms out of the biosolids operational process. He commends the Expert Panel for their work and invites them to his farm to observe the biosolids land application process.

Amber Carwile, Darlington Heights, VA. Her father grew up on a dairy farm. What it boils down to is that there are people getting sick from it, there are people it doesn't affect, but there are people it does affect. The farmers save money, but is it worth it? We are asking that you look into it, take more time to make sure there are people who are not getting hurt. We are asking for accountability. Ms. Carwile's statement is attached below.

Closing Comments 2:55 p.m.

Jeff Corbin – Panel Members, get draft recommendations to Neil or Jeff so that we can start putting together a skeleton report.

Next Meetings are July 23, September, October, and November.

VIRGINIA BIOSOLIDS COUNCIL

Virginia Biosolids Renewable Energy Task Force
Presentation to Biosolids Expert Panel
June 25, 2008
Mike McEvoy, Chairman

My name is Mike McEvoy, Executive Director of the Western Virginia Water Authority located in Roanoke. I am also Chair of the Virginia Biosolids Council. I want to thank you for the opportunity to speak today.

The Western Virginia Water Authority provides water and wastewater service to approximately 200,000 customers in the Roanoke Valley. After extracting methane through anaerobic digestion then curing the material in lagoons, the Authority uses land application to recycle its biosolids. In an average year we apply 9,000 dry tons to farm land in Bedford, Botetourt and Franklin Counties. The Authority has permits and agreements with farmers covering more than 4,000 acres. We have a 5-year waiting list of farmers that could expand the program by another 5,000 acres. Our biosolids is land applied as a liquid, typically on pasture and hay fields. We have been running the program successfully for more than 25 years and have been recognized by the EPA through its national awards program.

The mission of the Biosolids Council is to provide information and public outreach about biosolids recycling—including composting, land application or other management options that are protective of public health and the environment. Virtually all of Virginia's largest municipal treatment facilities and authorities are represented on the Council, and all of the application contractors we hire to land apply biosolids to family farms in Virginia.

One of our objectives this year was to partner with other organizations and evaluate alternative technologies that would provide more management options for wastewater recycling facilities in Virginia. As I mentioned above, the Authority already extracts methane from biosolids that is then used to heat and help power the treatment plant but I believe we can do more. Biosolids is an under-utilized resource; both as a fertilizer and fuel.

Earlier this year the Council, in partnership with the Chesapeake Bay Foundation and various state government agencies, formed the Virginia Biosolids Renewable Energy Task Force. As a group we agreed to identify safe, practical, dependable and environmentally sound technologies through collaboration that will produce renewable energy from municipal organic resources, increase the options of municipalities for managing these resources, and protect water and air quality while minimizing greenhouse gas emissions.

We made the decision to convene a day-long seminar this fall to examine potential technologies. We also decided to evaluate funding options for use in pilot or demonstration projects, identify barriers to the adoption of new technology in Virginia—all while continuing to educate the public about sustainable recycling options for the biosolids we generate in Virginia.

I wanted to let you know about our effort, and we will keep the Panel informed of our activities. I would be happy to answer any questions.

Thank you.

Virginia Department of Environmental Quality

Biosolids Program: Buffer Provisions

Summary for Biosolids Expert Panel
June 25, 2008

Neil Zahradka
Manager, DEQ Office of Land Application Programs

Statutory Provisions

- Code of Virginia
  - § 62.1-44.19:3.E.
    - Reasonable special conditions may be incorporated into the permit to protect the environment or health, safety or welfare of persons living in the vicinity of a proposed land application site
  - § 62.1-44.19:3.O.
    - Extended buffers where incorporation is not practicable to protect odor sensitive receptors

Regulatory Provisions

- Virginia Pollution Abatement Permit Regulation
  - 9VAC25-32-100.6.
    - Restates § 62.1-44.19:3.E. from statute
  - 9VAC25-32-550.E.1.
    - Details buffer zone required for routine storage locations
  - 9VAC25-32-560. B.3.c.
    - Describes buffer required for applications to frozen ground

Regulatory Provisions

- Virginia Pollution Abatement Permit Regulation (continued)
  - 9VAC25-32-560.B.3.d.(1)
    - Setback distances for land application near various adjacent features
    - Reduction in buffer distance for incorporation
    - Obtaining landowner consent to reduce
    - Most restrictive distance governs
    - Increasing or decreasing distance based on site specific conditions

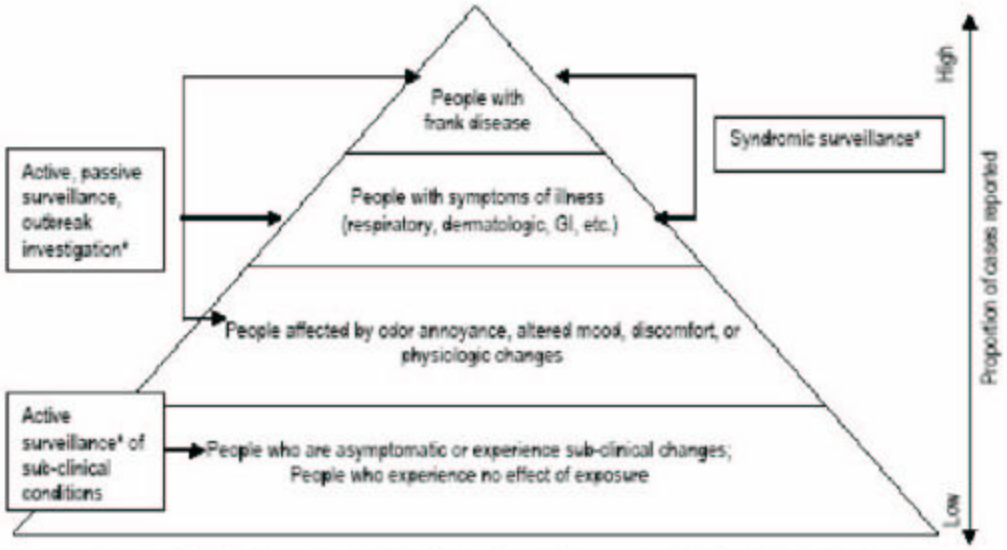
Regulatory Provisions

- Virginia Pollution Abatement Permit Regulation (continued)
  - 9VAC25-32-560.B.3.d.(2)
    - Extended buffer zones for odor sensitive receptors
    - 400 feet or more
    - Prior to or during biosolids use operations
    - To protect public health and the environment, OR
    - Prevent nuisance conditions from developing

Regulatory Provisions

- Virginia Pollution Abatement Permit Regulation (continued)
  - 9VAC25-32-560.C.
    - Forestland (Silviculture)
    - Same as agricultural provisions
  - 9VAC25-32-580
    - Buffers for incinerators based on site specifics and other regulatory requirements
  - 9VAC25-32-590
    - Emphasizes buffers are a component of proper standards for agricultural use

Attachment 3
Page 1



*Denotes the type of study design/investigation that can be used to enumerate the hypothetical population with symptoms and/or illness.

Figure 3-1. Hypothetical Population of Neighbors Exposed to Materials from Biosolids Land Application Sites.

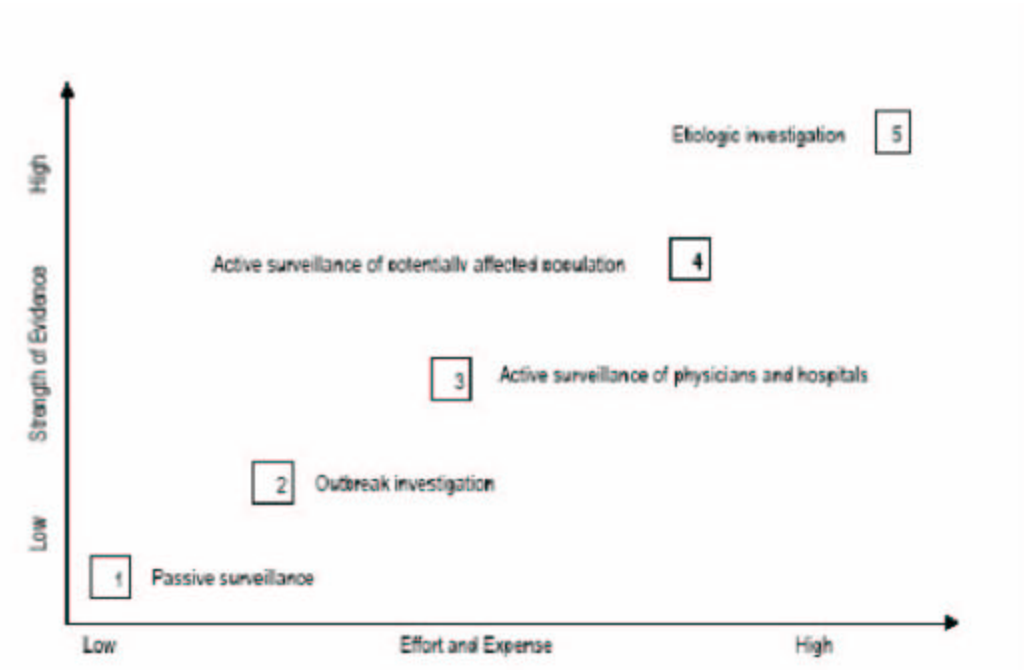


Figure 3-2. Quality of Information Obtained about the Pyramid of Potential Health Impacts of Biosolids Exposure Contrasted with the Effort Required for Each Study Design.

Attachment 3
Page 2

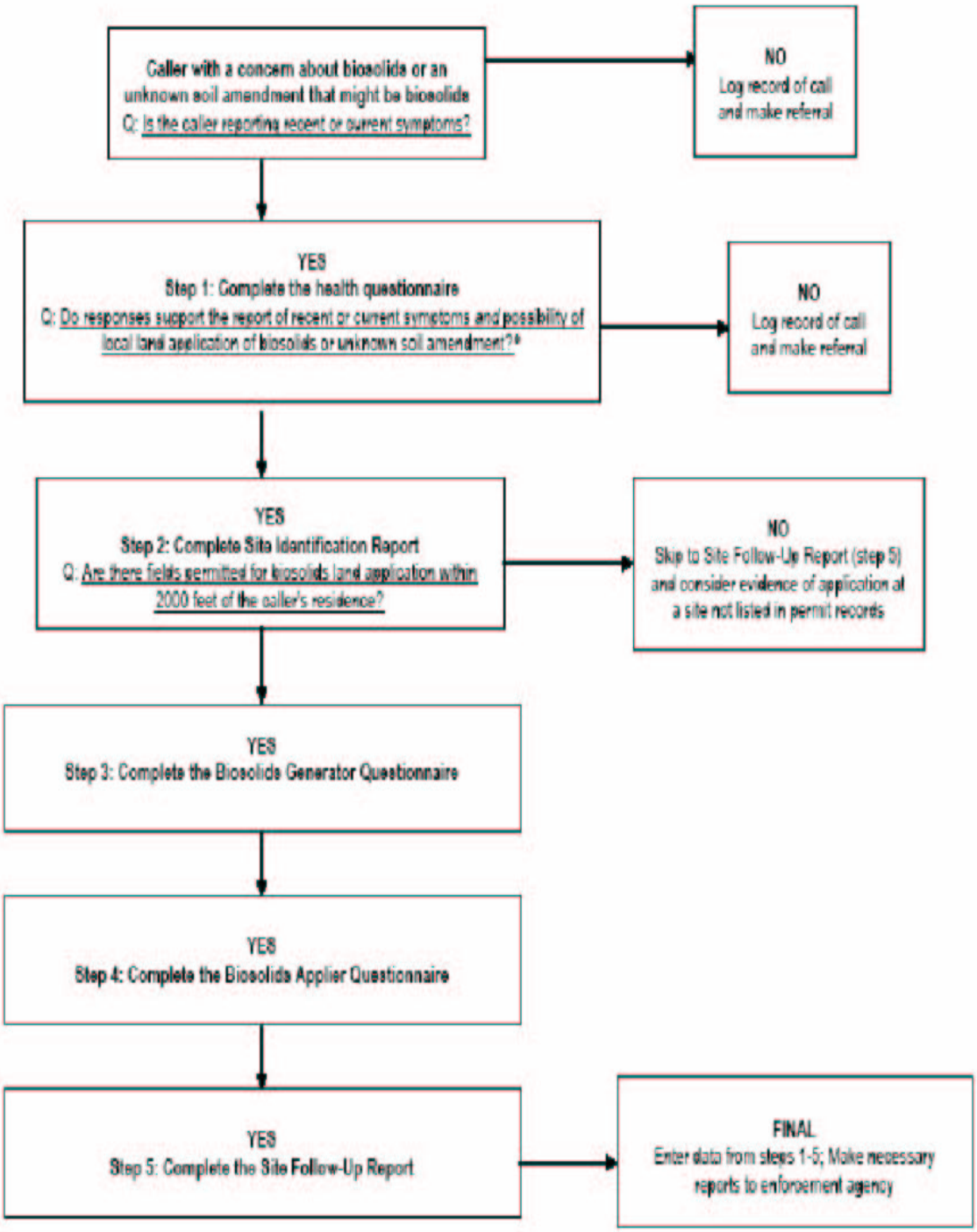


Figure ES-1. Investigation Protocol Decision Tree

* If the caller reports severe symptoms and ongoing or recent land application, Step 5 should be initiated as quickly as possible and concurrently with Steps 2-4.

Table 6-1: Hypothetical Classification of People Reporting Symptoms Near a Biosolids Land Application Site

Possible pathway	Respiratory symptoms	GI symptoms
Air	A	B
Water	C	D

HRSD Progress Farm 2008

Rhonda L. Bowen
HRSD
Recycling Manager

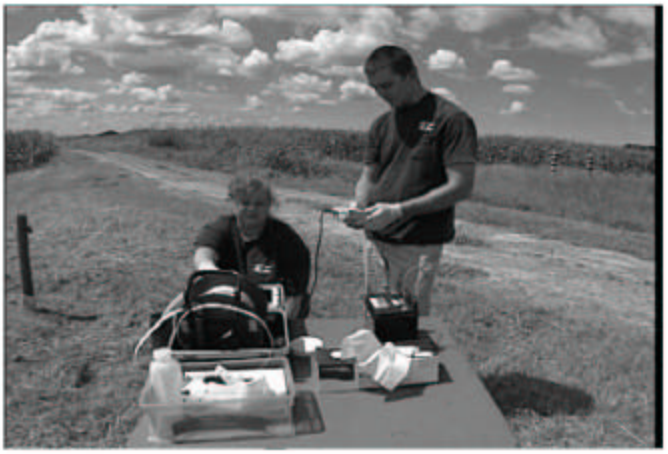
Atlantic Plant

- 54 MDG design
- Annual average flow 30 MGD
- Approximately 30,000 wet tons/ year land applied since 1980s
  - 1500 acres per year - Private Sites
  - HRSD Progress Farm (300 acres)

Progress Farm

Progress Farm Monitoring Program

- Study environmental effects
  - Ground Water
  - Surface Water (Lake Tecumseh/Scopus Creek)
  - Runoff
  - Soils
  - Crops
  - Frequent Biosolids Application



Frequent Sampling and Analysis

- 13 monitoring wells
  - 5 at 25 feet deep
  - Bi-monthly monitoring
- Soil monitoring 2 times/year
  - Surface and 3 feet
- Surface runoff and crop tissue analyses
  - compared to local agricultural fields

Biodiversity project crew at Progress Farm 1/11/01. Smithsonian scientists, high school environmental science students and Atlantic Plant Manager survey and mark a hectare square (100 m x 100m) biodiversity study plot.

Surface Water and Runoff Results

- No deterioration of surface waters
- Runoff typical of agricultural fields

Groundwater Test Results

- 55 constituents analyzed
  - on-site groundwater wells
  - all met potable water quality standards
  - temporary fluctuations - natural cyclic patterns
  - No accumulation
  - No horizontal or vertical movement

Soil Test Results

- Soil system maintained ambient levels
  - bacteriological
  - metal concentrations
  - no contamination or accumulation

Crop Test Results

- Wheat and Corn Yields comparable to locally grown and control plots
- All metals were within natural variations
- Cd levels on special “high application” test plots 90dry ton acre showed minor increases however levels still within natural ranges

Progress Farm Results

- 20 year study
- Biosolids applied frequently
- No adverse environmental or health effects
- Crop yields higher
- Improved soil characteristics
  - Organic matter content
  - Moisture holding capacity

Celebrate Farming

- Reduces dependence on chemical fertilizers
- Reduces soil erosion
- Reduces runoff
- Provides essential micronutrients
- Sustains agriculture and open space
- Provides cost savings to farmers

Biosolids Expert Panel Meeting

PUBLIC COMMENT: June 25, 2008

Amber Carrick, Darlington Heights, VA -

I could get up here and tell you what degrees I have, the degrees I am working on, or what I plan to do with my life, but I won't. All you need to know is I grew up on a farm. My father also grew up on a farm. As others have said before me I also know about farming and odors. That is not why I am here. I am here because people are getting sick. There may be some who have not been affected, but there are people who have been affected and no one can tell us why. I have been affected, my family has been affected, and people I know have been affected. Farmers are saving money, but is it worth it if others are suffering because of it? There needs to be some type of accountability for rules and regulations. We shouldn't be bashing one another. We should be working together to find a solution.